

Zeta Solar Project—Energy Consumption Summary

Date of Last Revision: December 15, 2023

Summary of Energy Use During Construction (2025)

(Annually)

Construction vehicle fuel	579,526 gallons (gasoline, diesel)
Construction equipment fuel	549,111 gallons (diesel)
Construction on-site pickup trucks	39,550 gallons (gasoline, diesel)

Summary of Energy Use During Proposed Operations (2027)

(Annually)

Operational vehicle fuel consumption	37,039 gallons (gasoline, diesel)
Operational natural gas consumption	102,044 kilo-British Thermal Units
Operational electricity consumption	57,134 kilowatt hours
Operational off-road equipment fuel consumption	15,940 gallons (diesel)

Summary of Energy Use During Decommissioning (2050)

(Annually)

Decommissioning vehicle fuel	199,017 gallons (gasoline, diesel)
Decommissioning equipment fuel	26,636 gallons (diesel)
Decommissioning on-site pickup trucks	32907.0598 gallons (gasoline, diesel)

Construction Vehicle Fuel Calculations (Page 1 of 2)

California Air Resource Board (CARB). 2023. EMFAC2021 Web Database. Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed June 22, 2023.

Source: EMFAC2021 (v1.0.2) Emissions Inventory
 Region Type: County
 Region: Merced
 Calendar Year: 2025
 Season: Annual

VMT = Vehicle Miles Traveled
 FE = Fuel Economy

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Given						Calculations				
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (mi/day)	Fuel Consumption (1000 gallons/day)	FE (mi/gallon)	VMT*FE
Merced	2025	HHDT	Aggregate	Aggregate	Gasoline	1.27587085	54.186613	0.017471893	3.10135896	168.0521
Merced	2025	HHDT	Aggregate	Aggregate	Diesel	8835.19055	1309857.7	211.9927392	6.17878568	8093330
Merced	2025	LDA	Aggregate	Aggregate	Gasoline	88433.6454	3938366.4	129.203173	30.4819632	1.2E+08
Merced	2025	LDA	Aggregate	Aggregate	Diesel	233.335942	8383.4523	0.182641443	45.9011505	384810.1
Merced	2025	LDT1	Aggregate	Aggregate	Gasoline	7905.92918	267044.21	10.81261025	24.6974783	6595319
Merced	2025	LDT1	Aggregate	Aggregate	Diesel	4.41719025	48.900784	0.001907485	25.636265	1253.633
Merced	2025	LDT2	Aggregate	Aggregate	Gasoline	35771.1386	1460620.9	59.85963655	24.400764	35640265
Merced	2025	LDT2	Aggregate	Aggregate	Diesel	95.1530913	4141.9184	0.116469535	35.562247	147295.9
Merced	2025	LHDT1	Aggregate	Aggregate	Gasoline	3427.82146	125183.18	13.30613583	9.40792895	1177714
Merced	2025	LHDT1	Aggregate	Aggregate	Diesel	3974.41464	142116.67	8.982340261	15.8217864	2248540
Merced	2025	LHDT2	Aggregate	Aggregate	Gasoline	446.761617	16034.806	1.91814147	8.35955344	134043.8
Merced	2025	LHDT2	Aggregate	Aggregate	Diesel	1372.71323	51311.124	3.927691607	13.0639391	670325.4
Merced	2025	MDV	Aggregate	Aggregate	Gasoline	35655.4399	1340978.4	68.37427591	19.6123225	26299700
Merced	2025	MDV	Aggregate	Aggregate	Diesel	580.896045	23525.789	0.916452815	25.6704862	603918.4
Merced	2025	MHDT	Aggregate	Aggregate	Gasoline	208.10954	16507.061	3.457475537	4.77431029	78809.83
Merced	2025	MHDT	Aggregate	Aggregate	Diesel	1993.35341	96364.207	10.97683043	8.77887358	845969.2

Worker	
Sum of VMT*FE (Column BI)	1.9E+08
Total VMT	7043110
Weighted Average Fuel Economy	26.93721

Vendor	
Sum of VMT*FE (Column BI)	13248900
Total VMT	1757429
Weighted Average Fuel Economy	7.538797

Haul	
Sum of VMT*FE (Column BI)	8093498
Total VMT	1309912
Weighted Average Fuel Economy	6.178658

Construction Vehicle Fuel Calculations (Page 2 of 2)

Construction Schedule

Source: CalEEMod Output
Zeta Solar Project

CalEEMod Phase Type	Phase Name	Start Date	End Date	Num Days Week	Num Days
Site Preparation	Civil Work	1/1/2025	7/1/2025	6	156
Building Construction	Facility Construction	7/1/2025	7/1/2026	6	314
Paving	Testing and Commissioning	7/1/2026	12/31/2026	6	158

Construction Trips and VMT

Phase Name	Trips per Day			Construction Trip Length in Miles			Number of Days per Phase	Trips per Phase			VMT per Phase			Fuel Consumption (gallons)		
	Worker Trip Number	Vendor Trip Number*	Hauling Trip Number*	Worker Trip Length	Vendor Trip Length	Hauling Trip Length		Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trips	Vendor Trips	Hauling Trips	Worker Trips	Vendor Trips	Hauling Trips
Civil Work	300	40	3	56	56	20	156	46,800	6,240	390	2,620,800	349,440	7,800	97,292.94	46,352.22	1,262.41
Facility Construction	300	40	0	56	56	20	314	94,200	12,560	0	5,275,200	703,360	0	195,833.23	93,298.70	0.00
Testing and Commissioning	300	40	0	56	56	20	158	47,400	6,320	0	2,654,400	353,920	0	98,540.29	46,946.48	0.00
											10,550,400	1,406,720	7,800	391,666	186,597	1,262

*See Section 4.3.1 of AQ/GHG Impact Assessment. Project construction would generate 300 passenger car trips per day and 40 vendor+hauling trips per day. An additional 390 haul truck trips would occur.
*Vendor trips were assumed to include water trucks (6 per day)

Total Project Construction VMT (miles)
11,964,920

Total Project Fuel Consumption (gallons)
579,526

Construction Equipment Fuel Calculation (Page 1 of 2)

Source: CalEEMod Output
 Zeta Solar Project
Construction Schedule

CalEEMod Phase Type	Phase Name	Start Date	End Date	Num Days/Week	Num Days
Site Preparation	Civil Work	1/1/2025	7/1/2025	6	156
Building Construction	Above-Ground Electrical/Module Racking	7/1/2025	7/1/2026	6	314
Paving	Wind Down and Commissioning	7/1/2026	12/31/2026	6	158

Construction Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of Days	HP Hours	Fuel (gallons/HP-hour)	Diesel Fuel Usage
Civil Work	Tractors/Loaders/Backhoes	2	6	97	0.37	156	67,186.08	0.05648827	3,795.23
Civil Work	Excavators	4	8	158	0.38	156	299,719.68	0.05046116	15,124.20
Civil Work	Graders	2	8	187	0.41	156	191,368.32	0.05088487	9,737.75
Civil Work	Off-Highway Trucks	7	8	402	0.38	156	1,334,511.36	0.05014684	66,921.52
Above-Ground Electrical/Module Racking	Cranes	1	8	231	0.29	314	168,278.88	0.05319610	8,951.78
Above-Ground Electrical/Module Racking	Tractors/Loaders/Backhoes	2	8	97	0.37	314	180,311.36	0.05648827	10,185.48
Above-Ground Electrical/Module Racking	Rollers	2	8	80	0.38	314	152,729.60	0.05802827	8,862.63
Above-Ground Electrical/Module Racking	Off-Highway Trucks	14	8	402	0.38	314	5,372,263.68	0.05014684	269,402.02
Wind Down and Commissioning	Rollers	2	8	36	0.38	158	34,583.04	0.05802827	2,006.79
Wind Down and Commissioning	Excavators	2	6	158	0.38	158	113,835.84	0.05046116	5,744.29
Wind Down and Commissioning	Generator Sets	2	4	84	0.74	158	78,570.24	0.01599027	1,256.36
Wind Down and Commissioning	Off-Highway Trucks	5	6	402	0.38	158	724,082.40	0.05014684	36,310.44
Wind Down and Commissioning	Off-Highway Trucks	8	4	402	0.38	158	772,354.56	0.05014684	38,731.14
Wind Down and Commissioning	Off-Highway Trucks	6	8	402	0.38	158	1,158,531.84	0.05014684	58,096.71
Wind Down and Commissioning	Skid Steer Loaders	10	6	71	0.37	158	249,039.60	0.056154581	13,984.71
Total Construction Equipment Fuel Consumption (gallons)									549,111.05

Notes:

Equipment assumptions are provided in the CalEEMod output files.
 Source of usage estimates: California Air Resource Board (CARB). 2023. OFFROAD2021 (v1.0.4) Emissions Inventory
 Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed June 22, 2023.

Construction Equipment Fuel Calculation (Page 2 of 2)

Model Output: OFFROAD2021 (v1.0.4) Emissions Inventory

Region Type: County

Region: Merced

Calendar Year: 2025

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	CalYr	Vehicle Class	Model Year	HP_Bin	Fuel	Fuel Consumption (gallons/year)	Horsepower Hours (HP- hours/year)	Fuel (gallons/HP- hour)
Merced	2025	Construction and Mining - Cranes	Aggregate	300	Diesel	22423.96007	421533.9236	0.053196098
Merced	2025	Construction and Mining - Excavators	Aggregate	175	Diesel	145695.4278	2887278.618	0.05046116
Merced	2025	Construction and Mining - Graders	Aggregate	300	Diesel	56408.28329	1108547.217	0.050884872
Merced	2025	Construction and Mining - Off-Highway Trucks	Aggregate	600	Diesel	142118.786	2834052.954	0.050146835
Merced	2025	Construction and Mining - Rollers	Aggregate	100	Diesel	10087.52666	173838.1512	0.058028267
Merced	2025	Construction and Mining - Tractors/Loaders/Backho	Aggregate	100	Diesel	173765.5837	3076135.505	0.056488273
Merced	2025	Construction and Mining - Skid Steer Loaders	Aggregate	100	Diesel	57227.36196	1019104.064	0.056154581
Merced	2025	Portable Equipment - Rental Generator	Aggregate	100	Diesel	43783.83006	2738155.322	0.015990265

On-Site Trucks Construction Vehicle Fuel Calculations

California Air Resource Board (CARB). 2023. EMFAC2021 Web Database. Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed June 22, 2023.

Source: EMFAC2021 (v1.0.2) Emissions Inventory
 Region Type: County
 Region: Merced
 Calendar Year: 2025
 Season: Annual
 Vehicle Classification: EMFAC2007 Categories

VMT = Vehicle Miles Traveled
 FE = Fuel Economy

Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Given							Calculations		
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (mi/day)	Fuel Consumption (1000 gallons/day)	FE (mi/gallon)
Merced	2025	MHDT	Aggregate	Aggregate	Gasoline	208.10954	16507.061	3.457475537	4.774310286
Merced		2025 MHDT	Aggregate	Aggregate	Diesel	1993.35341	96364.207	10.97683043	8.778873581

On-Site Pick-Up Trucks

Fuel Type	Number of Onsite Trucks per Day	Annual Miles	Annual Fuel Consumption
Gasoline	1.35	41974.63792	8791.77
Diesel	8.65	270025.3621	30758.54
			39550.31

Operational Fuel Calculation—Project-Generated Operational Trips (Page 1 of 2)

California Air Resource Board (CARB). 2023. EMFAC2021 Web Database. Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed June 22, 2023.

Source: EMFAC2021 (v1.0.2) Emissions Inventory
 Region Type: County
 Region: Merced
 Calendar Year: 2027
 Season: Annual
 Vehicle Classification: EMFAC2007 Categories
 Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

VMT = Vehicle Miles Traveled
 FE = Fuel Economy

Region	Calendar Year	Vehicle Class	Model Year	Given			Calculations			
				Speed	Fuel	Population	VMT	Fuel Consumption	FE	VMT*FE
Merced	2027	LDA	Aggregate	Aggregate	Gasoline	88658.86077	4034515.656	126.4412114	31.90823318	128734266.3
Merced	2027	LDA	Aggregate	Aggregate	Diesel	202.5515555	7274.78639	0.154066413	47.21850941	343504.5696
									Sum of VMT*FE	129077770.9
									Total VMT	4041790.443
									Weighted Average Fuel Economy	31.93579003
Merced	2027	LDT1	Aggregate	Aggregate	Gasoline	7310.07124	255051.3481	9.876434559	25.82423309	6586505.463
Merced	2027	LDT1	Aggregate	Aggregate	Diesel	0.962941948	11.68584581	0.000418799	27.90323159	326.072862
Merced	2027	LDT2	Aggregate	Aggregate	Gasoline	36746.16931	1540271.531	59.72754808	25.78829335	39720974.08
Merced	2027	LDT2	Aggregate	Aggregate	Diesel	104.9875201	4716.205798	0.12629161	37.34377763	176120.9405
Merced	2027	MDV	Aggregate	Aggregate	Gasoline	33757.43764	1296968.877	63.11586417	20.5490156	26651433.69
Merced	2027	MDV	Aggregate	Aggregate	Diesel	558.3952083	22157.56622	0.838939591	26.41139654	585212.2677
									Sum of VMT*FE	73720572.51
									Total VMT	3119177.214
									Weighted Average Fuel Economy	23.63462139
Merced	2027	LHDT1	Aggregate	Aggregate	Gasoline	3200.834969	121033.0665	12.44867565	9.722565671	1176751.938
Merced	2027	LHDT1	Aggregate	Aggregate	Diesel	3654.832164	130751.5954	8.244566703	15.85912275	2073605.602
Merced	2027	LHDT2	Aggregate	Aggregate	Gasoline	416.561717	15265.54067	1.779291081	8.579563419	130971.6743
Merced	2027	LHDT2	Aggregate	Aggregate	Diesel	1308.653633	48751.23605	3.699707845	13.17705022	642397.4855
Merced	2027	MHDT	Aggregate	Aggregate	Gasoline	191.4671435	16212.71075	3.315410668	4.890106346	79281.8797
Merced	2027	MHDT	Aggregate	Aggregate	Diesel	2062.47289	97587.71008	10.96851183	8.897078434	868245.5108
Merced	2027	HHDT	Aggregate	Aggregate	Gasoline	0.335794524	33.45299861	0.008669847	3.858545482	129.0799166
Merced	2027	HHDT	Aggregate	Aggregate	Diesel	9228.403954	1337843.456	209.3963085	6.389049863	8547548.552
									Sum of VMT*FE	13518931.72
									Total VMT	1767478.769
									Weighted Average Fuel Economy	7.64870954
Merced	2027	MCY	Aggregate	Aggregate	Gasoline	3999.763727	22782.9513	0.537070801	42.4207595	966470.0981
									Weighted Average Fuel Economy	42.4207595
Merced	2027	MH	Aggregate	Aggregate	Gasoline	373.187728	3532.909687	0.800673707	4.412421263	15588.68582
Merced	2027	MH	Aggregate	Aggregate	Diesel	187.3829243	1726.528469	0.183738777	9.396647235	16223.57897
Merced	2027	OBUS	Aggregate	Aggregate	Gasoline	55.82279833	4035.622894	0.82262218	4.90580365	19797.97352
Merced	2027	OBUS	Aggregate	Aggregate	Diesel	55.99364796	5068.243905	0.805988017	6.288237295	31870.32034
Merced	2027	SBUS	Aggregate	Aggregate	Gasoline	38.50429355	3686.304298	0.365018123	10.0989624	37227.84851
Merced	2027	SBUS	Aggregate	Aggregate	Diesel	336.367168	7314.294874	0.887056623	8.245578337	60310.59136
Merced	2027	UBUS	Aggregate	Aggregate	Gasoline	35.96056232	3798.996314	0.730363008	5.201517976	19760.54762
Merced	2027	UBUS	Aggregate	Aggregate	Diesel	15.34114828	2721.299463	0.246237007	11.05154538	30074.56451
									Sum of VMT*FE	230854.1107
									Total VMT	31884.1999
									Weighted Average Fuel Economy	7.240392149

Operational Fuel Calculation—Project-Generated Operational Trips (Page 2 of 2)

Total Operational VMT

Zeta Solar Project

Land Use	Average Daily Trip Rate	Annual VMT
General Light Industry	40	817702.20
User Defined Industrial	12.5	651.79
		818353.99

Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	1.000
0.536912	0.047792	0.155729	0.136107	0.025842	0.006577	0.014300	0.050229	0.000842	0.000456	0.020491	0.002110	0.002612	

	Fraction of 1	Annual VMT	Daily VMT	Average Fuel Economy (miles/gallon)	Total Daily Fuel Consumption (gallons)	Total Annual Fuel Consumption (gallons)
Passenger Cars (LDA)	0.5369	439,034	1,203	31.94	37.7	13,747
Light Trucks and Medium Vehicles (LDT1, LDT2, and MDV)	0.3396	277,715	761	23.63	32.2	11,750
Light-Heavy to Heavy-Heavy Diesel Trucks	0.0969	79,275	217	7.65	28.4	10,364
Motorcycles	0.0205	16,756	46	42.42	1.1	395
Other	0.0060	4,923	13	7.24	1.9	680
water delivery trips		652	2	6.39	0.3	102
Total	1.0000	818353	2,242		101.5	37,039

817,701
36,937

Project Operations Natural Gas Use

Source: CalEEMod Output

Zeta Solar Project - Buildout Year Operations

kBTU/yr = kilo-British Thermal Units/year

	Natural Gas Use (kBTU/yr)	
Operations and Maintenance Building (General Light Industry)	86041.87038	
Warehouse (Unrefrigerated Warehouse - No Rail)	16002.45248	
Total	102,044	kBTU/yr

Project Operations Electricity Use

Source: CalEEMod Output

Zeta Solar Project - Buildout Year Operations

kWh/yr = kilowatt hours per year

	Electricity Use (kWh/yr)	
Operations and Maintenance Building (General Light Industry)	24914.67894	
Warehouse (Unrefrigerated Warehouse - No Rail)	32219.4459	
Total	57,134	kWh/yr

Operational Off-Road Equipment Fuel Calculation

Zeta Solar Project

Offroad Equipment Type	Amount	Annual Usage		Load Factor	HP Hours	Fuel (gallons/HP-	Diesel Fuel Usage
		Hours	Horse Power				
Emergency Generator	1	100	268	0.73	19,564.00	0.01634081	319.69
Off-Highway Truck (Maintenance)	3	730	376	0.38	312,907.20	0.04992043	15,620.46
							15,940.16

Notes:

Equipment assumptions provided by applicant.

Source of usage estimates: California Air Resource Board (CARB). 2023. OFFROAD2021 (v1.0.4) Emissions Inventory

Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed May 23, 2023.

Decommissioning Vehicle Fuel Calculations (Page 1 of 2)

California Air Resource Board (CARB). 2023. EMFAC2021 Web Database. Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed May 19, 2023.

Source: EMFAC2021 (v1.0.2) Emissions Inventory
 Region Type: County
 Region: Merced
 Calendar Year: 2050
 Season: Annual
 Vehicle Classification: EMFAC2007 Categories
 Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

VMT = Vehicle Miles Traveled
 FE = Fuel Economy

Given							Calculations			
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (mi/day)	Fuel Consumption (1000 gallons/day)	FE (mi/gallon)	VMT*FE
Merced	2050	HHDT	Aggregate	Aggregate	Gasoline	0.1283644	31.59477	0.006601088	4.78629808	151.222
Merced	2050	HHDT	Aggregate	Aggregate	Diesel	13084.892	2034903	269.5563176	7.54908413	15361656
Merced	2050	LDA	Aggregate	Aggregate	Gasoline	105513.13	5266594	137.1493278	38.4004353	2.02E+08
Merced	2050	LDA	Aggregate	Aggregate	Diesel	65.213419	3045.154	0.050345694	60.4849021	184185.9
Merced	2050	LDT1	Aggregate	Aggregate	Gasoline	5801.4154	253037.3	7.593197532	33.3242138	8432270
Merced	2050	LDT1	Aggregate	Aggregate	Diesel	0.0677783	3.043375	9.41534E-05	32.3235734	98.37275
Merced	2050	LDT2	Aggregate	Aggregate	Gasoline	49405.878	2224102	69.37802891	32.0577211	71299626
Merced	2050	LDT2	Aggregate	Aggregate	Diesel	187.92239	8510.542	0.194770182	43.6953	371870.7
Merced	2050	LHDT1	Aggregate	Aggregate	Gasoline	1682.3033	71976.85	6.294070025	11.4356604	823102.8
Merced	2050	LHDT1	Aggregate	Aggregate	Diesel	1148.4669	45560.49	2.710789686	16.8070901	765739.2
Merced	2050	LHDT2	Aggregate	Aggregate	Gasoline	181.01973	7593.261	0.747453241	10.1588444	77138.76
Merced	2050	LHDT2	Aggregate	Aggregate	Diesel	604.11256	22237.37	1.560400437	14.2510647	316906.2
Merced	2050	MDV	Aggregate	Aggregate	Gasoline	29201.224	1304223	49.33339261	26.4369169	34479630
Merced	2050	MDV	Aggregate	Aggregate	Diesel	331.20352	14371.44	0.431700862	33.2902769	478429.3
Merced	2050	MHDT	Aggregate	Aggregate	Gasoline	91.69006	9064.165	1.623553728	5.58291627	50604.47
Merced	2050	MHDT	Aggregate	Aggregate	Diesel	1774.9328	92679.81	9.112590232	10.1705235	942602.2

Worker
 Sum of VMT*FE (Column BI) 3.17E+08
 Total VMT 9073886
 Weighted Average Fuel Economy 34.98894

Vendor
 Sum of VMT*FE (Column BI) 18337901
 Total VMT 2284047
 Weighted Average Fuel Economy 8.028689

Haul
 Sum of VMT*FE (Column BI) 15361808
 Total VMT 2034935
 Weighted Average Fuel Economy 7.549041

Decommissioning Vehicle Fuel Calculations (Page 2 of 2)

Construction Schedule

Source: CalEEMod Output
Zeta Solar Project

CalEEMod Phase Type	Phase Name	Start Date	End Date	Num Days Week	Num Days
Demolition	Demolition	1/1/2050	3/1/2050	6	51
Site Preparation	Re-Vegetation	3/1/2050	6/30/2050	6	105
Grading	Re-Stabilization	6/30/2050	10/29/2050	6	105

Construction Trips and VMT

Phase Name	Trips per Day			Construction Trip Length in Miles			Number of Days per Phase	Trips per Phase			VMT per Phase			Fuel Consumption (gallons)		
	Worker Trip Number	Vendor Trip Number*	Hauling Trip Number*	Worker Trip Length	Vendor Trip Length	Hauling Trip Length		Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trips	Vendor Trips	Hauling Trips	Worker Trips	Vendor Trips	Hauling Trips
Demolition	300	40	3	56	56	52	51	15,300	2,040	128	856,800	114,240	6,630	24,487.74	14,228.97	878.26
Re-Vegetation	300	40	0	56	56	52	105	31,500	4,200	0	1,764,000	235,200	0	50,415.94	29,294.95	0.00
Re-Stabilization	300	40	0	56	56	52	105	31,500	4,200	0	1,764,000	235,200	0	50,415.94	29,294.95	0.00
											4,384,800	584,640	6,630	125,320	72,819	878

*See Section 4.4.6 of AQ/GHG Impact Assessment. Decommissioning working/vendor/hauling trucks assumed to be the same as construction. Additional haul truck trips added to demo to account
*See Section 4.3.1 of AQ/GHG Impact Assessment. Project construction would generate 300 passenger car trips per day and 40 vendor+hauling trips per day.

Total Project Construction VMT (miles)
4,976,070

Total Project Fuel Consumption (gallons)
199,017

Decommissioning Equipment Fuel Calculation (Page 1 of 2)

Source: CalEEMod Output

Zeta Solar Project

Construction Schedule

CalEEMod Phase Type	Phase Name	Start Date	End Date	Num Days Week	Num Days
Demolition	Demolition	1/1/2050	3/1/2050	6	51
Site Preparation	Site Stabilization	3/1/2050	6/30/2050	6	105
Grading	Re-Vegetation	6/30/2050	10/29/2050	6	105

Construction Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of Days	HP Hours	Fuel (gallons/HP-hour)	Diesel Fuel Usage
Demolition	Rubber Tired Dozers	2	8	367	0.4	51	119,788.80	0.02046767	2,451.80
Demolition	Excavators	3	8	36	0.38	51	16,744.32	0.01976270	330.91
Demolition	Concrete/Industrial Saws	1	8	33	0.73	51	9,828.72	0.07231405	710.75
Site Stabilization	Tractors/Loaders/Backhoes	4	8	84	0.37	105	104,428.80	0.01910971	1,995.60
Site Stabilization	Rubber Tired Dozers	3	8	367	0.4	105	369,936.00	0.02046767	7,571.73
Re-Vegetation	Graders	1	8	148	0.41	105	50,971.20	0.02114194	1,077.63
Re-Vegetation	Excavators	2	8	36	0.38	105	22,982.40	0.01976270	454.19
Re-Vegetation	Tractors/Loaders/Backhoes	2	8	84	0.37	105	52,214.40	0.01910971	997.80
Re-Vegetation	Scrapers	2	8	423	0.48	105	341,107.20	0.02498124	8,521.28
Re-Vegetation	Rubber Tired Dozers	1	8	367	0.4	105	123,312.00	0.02046767	2,523.91

Total Construction Equipment Fuel Consumption (gallons)

26,635.61

Notes:

Equipment assumptions are provided in the CalEEMod output files.

Source of usage estimates: California Air Resource Board (CARB). 2023. OFFROAD2021 (v1.0.4) Emissions Inventory

Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed May 19, 2023.

Decommissioning Equipment Fuel Calculation (Page 2 of 2)

Model Output: OFFROAD2021 (v1.0.4) Emissions Inventory

Region Type: County

Region: Merced

Calendar Year: 2050

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	CalYr	Vehicle Class	Model Year	HP_Bin	Fuel	Fuel Consumption (gallons/year)	Horsepower Hours (HP-hours/year)	Fuel (gallons/HP-hour)
Merced	2050	Construction and Mining - Excavators	Aggregate	175	Diesel	143332.7369	7252689.215	0.019762702
Merced	2050	Construction and Mining - Graders	Aggregate	300	Diesel	180320.5959	8529048.692	0.021141935
Merced	2050	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	100	Gasoline	383.25	5299.8	0.07231405
Merced	2050	Construction and Mining - Rubber Tired Dozers	Aggregate	300	Diesel	6599.12721	322417.1316	0.020467669
Merced	2050	Construction and Mining - Scrapers	Aggregate	600	Diesel	661137.8737	26465378.31	0.024981236
Merced	2050	Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	100	Diesel	705180.7227	36901690.99	0.019109713

On-Site Trucks Construction Vehicle Fuel Calculations

California Air Resource Board (CARB). 2023. EMFAC2021 Web Database. Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed June 22, 2023.

Source: EMFAC2021 (v1.0.2) Emissions Inventory
 Region Type: County
 Region: Merced
 Calendar Year: 2050
 Season: Annual
 Vehicle Classification: EMFAC2007 Categories

VMT = Vehicle Miles Traveled
 FE = Fuel Economy

Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Given							Calculations		
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (mi/day)	Fuel Consumption (1000 gallons/day)	FE (mi/gallon)
Merced	2050	MHDT	Aggregate	Aggregate	Gasoline	91.6900597	9064.1645	1.623553728	5.58291627
Merced		2050 MHDT	Aggregate	Aggregate	Diesel	1774.93276	92679.813	9.112590232	10.17052353

On-Site Pick-Up Trucks

Fuel Type	Number of Onsite Trucks per Day	Annual Miles	Annual Fuel Consumption
Gasoline	0.88	27603.02808	4944.20
Diesel	9.12	284396.9719	27962.86
			32907.06